CHANGE AND COMMUNITY ADJUSTMENT: THE METAMORPHOSIS OF RURAL AMERICA[1/]

by

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The first part of this paper is organized around a number of maps and figures which will help us to visualize the changes which have taken place in the structure of rural society in the United States during the past 50 or 60 years. The second part of the paper will relate these changes in rural society more directly to the purposes of this conference.

The maps and figures are organized into three clusters. The first cluster shows the small geographical scale on which rural communities, rural labor markets and retail trade areas were organized about 1911-13 in a horse and buggy society.

The second cluster portrays the nature of the transformation of rural society under the impact of the passenger automobile. The effects include a tremendous expansion in the sizes of labor market and retail trade areas; the emergence of a hierarchy of central places or trade centers as the automobile gave relatively free rein to economies of size in stores, schools and other establishments; and the de facto organization of the residents of these trade centers, together with the surrounding farm population, into relatively large functional economic areas or low density cities, each representing a synthesis of rural and urban society in an area as large as several typical counties.

1/ Paper prepared for a conference on Implications of Structural and Market Changes on Farm Management and Marketing Research, Chicago, April 24-26, 1967.

The third cluster of maps presents a view of the United States economy as a set of functional economic areas (FEA's) which both absorbs and extends the present system of Standard Metropolitan Statistical Areas (SMSA's) and supersedes the traditional dichotomy between urban and rural society.

I. The Social Anatomy of an Agricultural Community, 1911 - 1913

In 1915, C. J. Galpin, a University of Wisconsin sociologist, published an Agricultural Experiment Station bulletin which immediately became a classic.[2/] Galpin made his field survey during 1911-1913. His study covered a single 16-township county (Walworth) in southern Wisconsin. Figures 1, 2 and 3 are reproduced from Galpin's 1915 bulletin.

Rural society as of 1915 was organized on a very small geographic scale. Figure 1 indicates that there were about 100 school districts in Walworth County, each covering on the average an area of five or six square miles. These school districts were no doubt organized when an eighth grade education was the norm and it was believed that the subjects essential to farm boys and girls could be taught in one-room school houses.

Figure 2 shows that Walworth County was served by 12 trade centers, towns ranging from about 500 to 2,500 in population. The average trade area covered about 50 square miles. The farm population of each trade area was about as large as the population of the trade center. Galpin also commented that the farm people patronized the same stores and obtained the same range of services from the trade center as did the residents of the center itself.

2/ Galpin, C. J., The Social Anatomy of an Agricultural Community, Wisconsin Agr. Exp. Sta. Res. Bul. No. 34, May 1915. 34 pp.

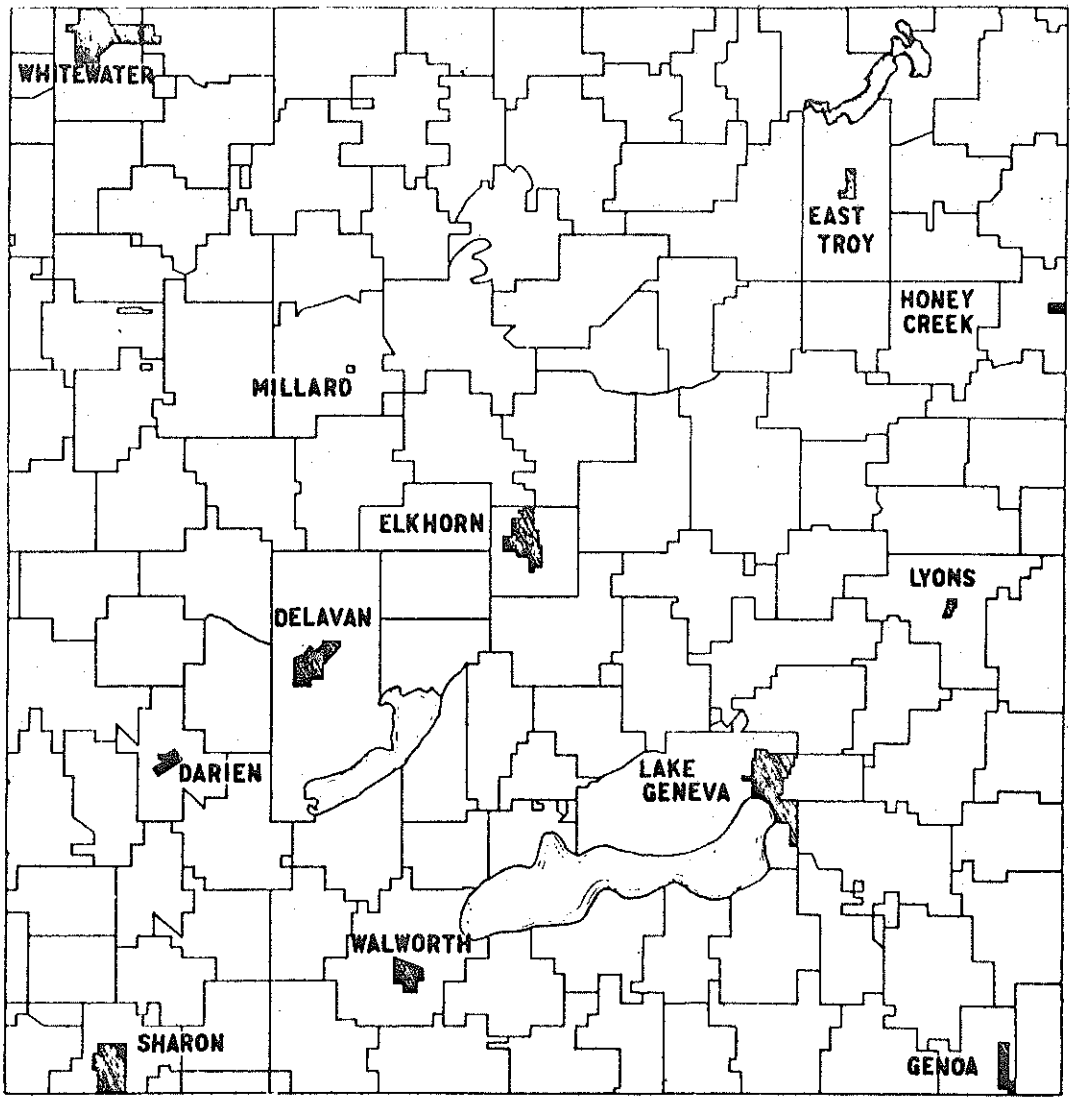

FIG. 1.—A MAP OF THE SCHOOL DISTRICTS OF WALWORTH COUNTY

The small zigzag areas on this map show the scale of the prevailing type of organized rural social life in Wisconsin. The village and city centers, however, suggest a changing scale commensurate with the coming economic rural order.

Source: C. J. Galpin, op. cit

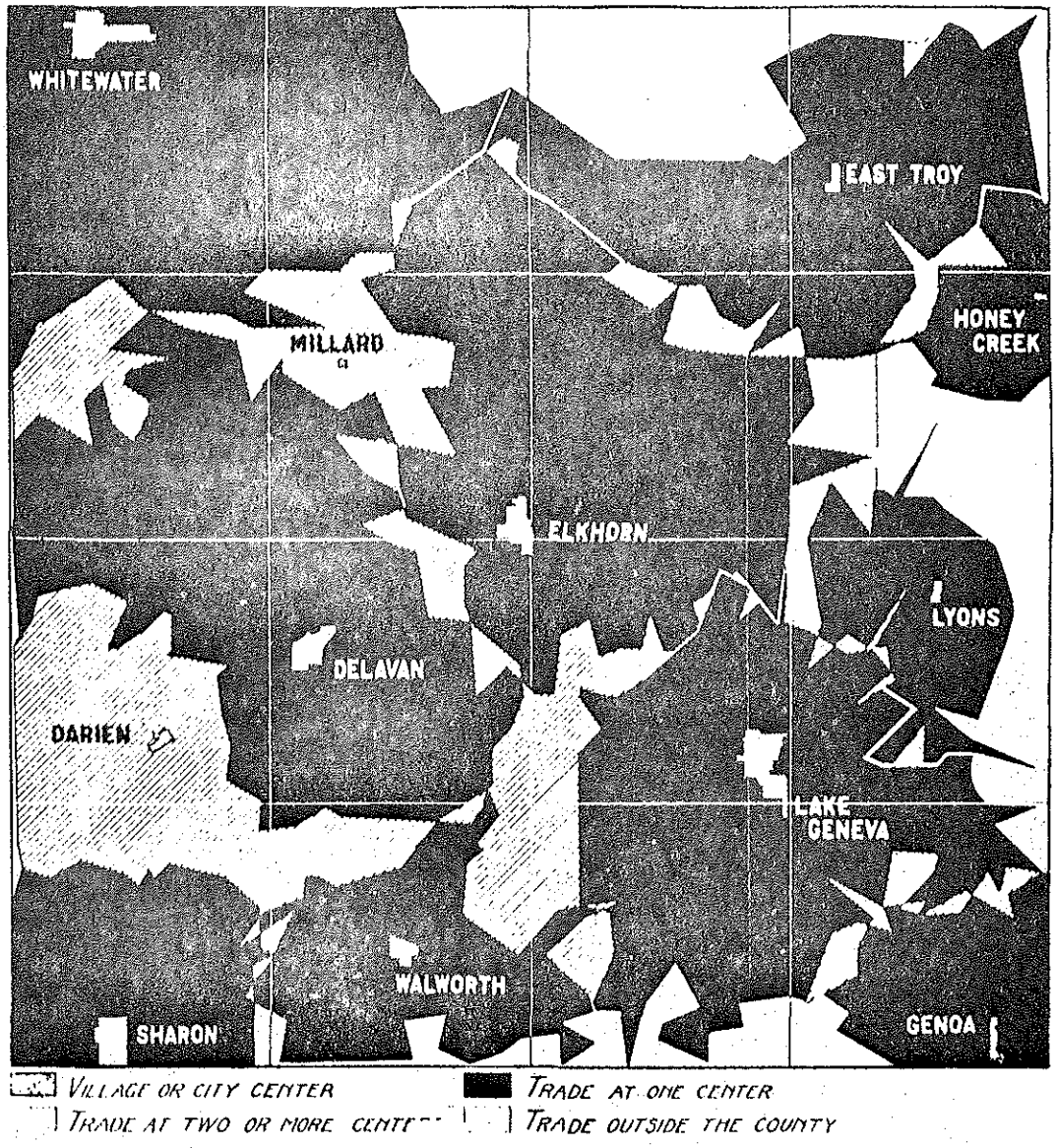

FIG. 2 TRADE COMMUNITIES

Twelve villages and small cities situated in the county serve as trade centers for the farm homes precisely as for the village and city homes and all the homes trading at the same center form a trade community. Township lines six miles apart indicate the distance.

SOURCE: C. J. Galpin, op. cit.

Galpin also delineated 11 banking zones, 7 local newspaper zones, 12 village milk zones, 12 village church zones, 9 high school zones and 4 village library zones. In general, these various types of areas tended to reinforce one another. Galpin summarized his findings with respect to "the actual but unofficial community" in the following words:

"Eight of the twelve civic centers of Walworth County are incorporated; four as cities and four as villages. Officially, that is, legally, the incorporated centers are treated as communities, each by and for itself. The foregoing analysis of the use of the leading institutions of each center by the farm population discloses the fact, however, that these institutions are agencies of social service over a comparatively determinable and fixed area of land surrounding each center; that this social service is precisely the same in character as is rendered to those people--whether artisans, employees, or professional persons--who happen to live within the corporate limits of the city or village; moreover, the plain inference is that the inhabitants of the center are more vitally concerned in reality with the development and upkeep of their particular farm land basis than with any other equal area of land in the state."

"It is difficult, if not impossible, to avoid the conclusion that the trade zone about one of these rather complete agricultural civic centers forms the boundary of an actual, if not legal, community, within which the apparent entanglement of human life is resolved into a fairly unitary system of interrelatedness. The fundamental community is a composite of many expanding and contracting feature communities possessing the characteristic pulsating instability of all real life."

Galpin then proceeded to summarize the essence of his findings by means of Figure 3, which he called "a conventionalized community form":

"It is possible to conventionalize the form and relationship of these 12 agricultural communities in the following way. Suppose the civic centers to be equal in size and population, equally complete institutionally, and equally distant from each other; suppose all farm homes to be connected with the centers by equally good roads at all seasons of the year, and also equally direct. Then apparently each community would be a circle, with the agricultural city as its center, having a radius somewhat longer than half the distance between any two centers. In order to include all the farm territory within some circle, and to have the least possible common area, we must impose the further condition that the centers be arranged so that only six centers are equally distant from any one center, as shown in Figure 3."[3/]

Galpin used the phrases "agricultural community," "fundamental community," and "rurban community" interchangeably to describe what he saw.

Figure 4 (by Karl Fox) is in keeping with the small scale of the communities Galpin found. However, it incorporates a constraint upon the form of such a community which is imposed by a rectangular grid of section roads. Such road grids cover much of the Midwest. (This was not strictly true of Walworth County, but we wish to illustrate a fairly widespread phenomenon.)

Consider the square centered on East Troy. Given a complete grid of east-west and north-south section roads, each corner of the square is five miles by road from the trade center. However, if we wish to reach certain

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3/ Galpin, op. cit., pp. 16-19.

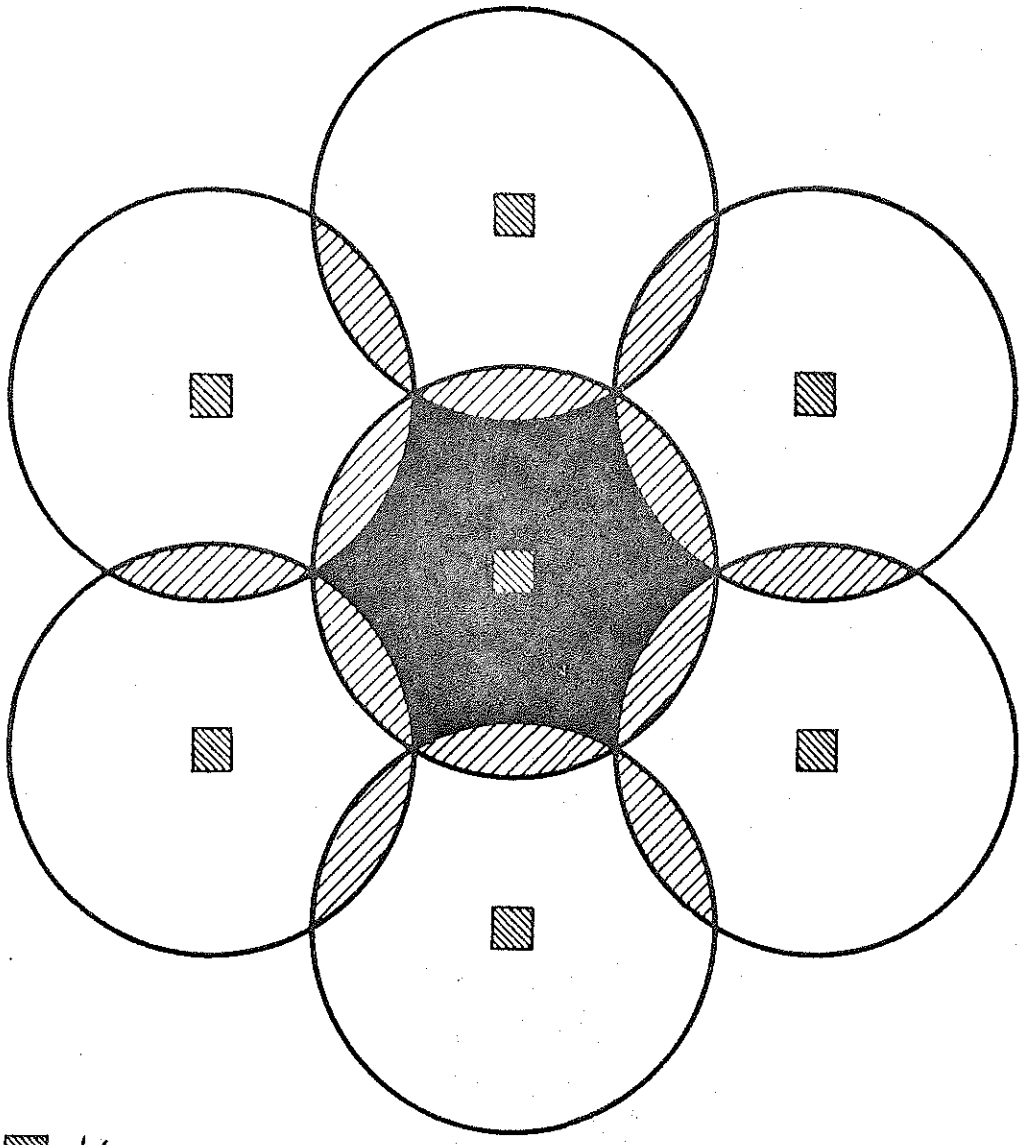
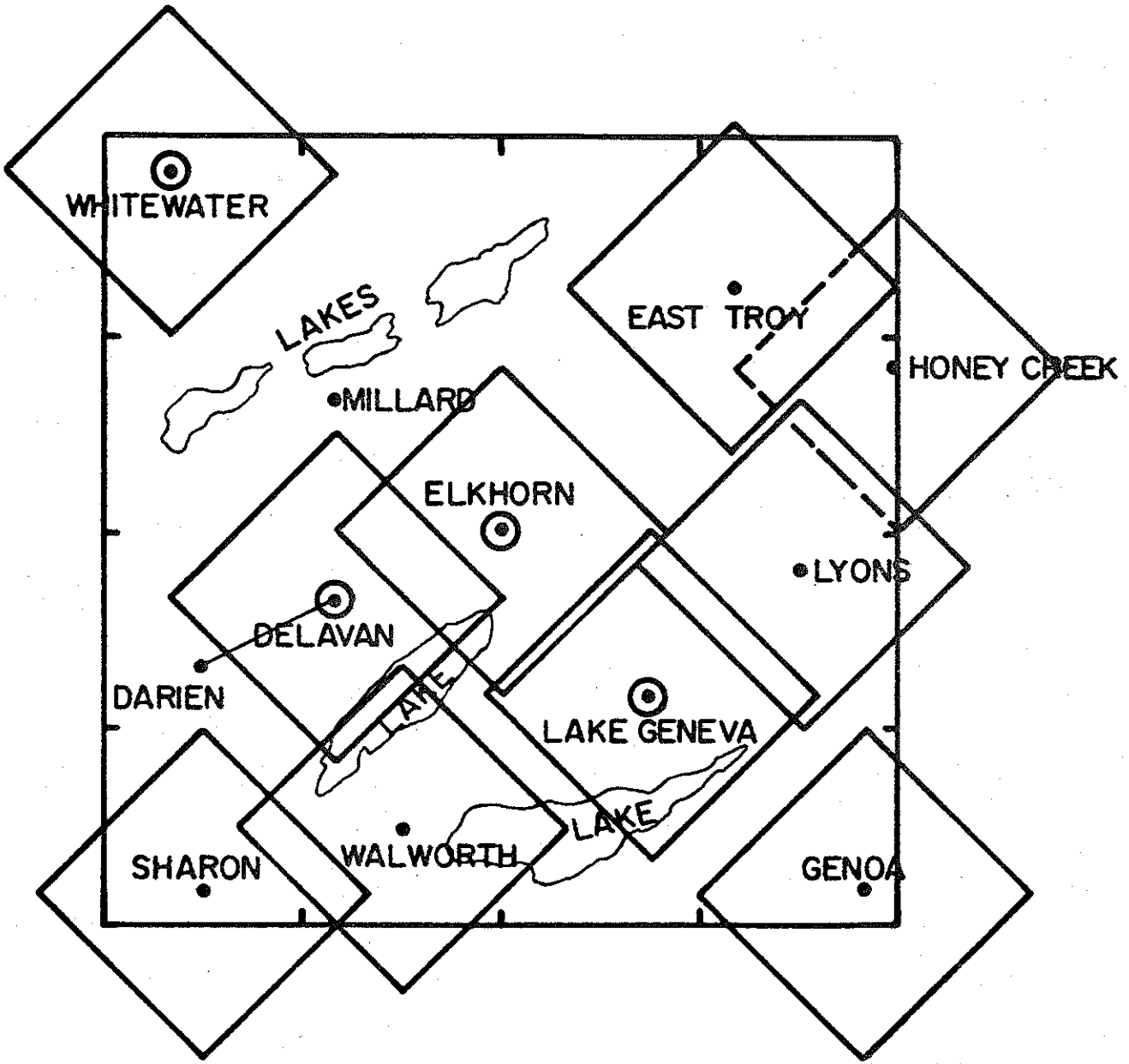


FIG. 3 - THE THEORETICAL FORM OF AN AGRICULTURAL COMMUNITY

If all the conditions relating to farm homes and neighboring trade centers were conceived to be equal, then apparently the agricultural community would be in the form of a circle whose outer edge it would share more or less with neighboring communities.

Figure 4 Schematic Map of County Studied by C. J. Galpin (1915), Assuming a Rectangular Road Grid and Travel (Pedestrian or Horse and Wagon) at 5 Miles Per Hour.[1]



points on the northeast boundary of the square we must travel one mile east and four miles north, two miles east and three miles north, three miles east and two miles north, or four miles east and one mile north. In each case, we must travel five miles by road (the order of operations is immaterial) to reach the boundary of the square. If we assume that people in 1915 could travel on foot or by horse and wagon at an average speed of five miles an hour, the boundary of the East Troy trade area is essentially a circle with a radius of 60 minutes. Under our assumptions, the rectangular road grid transforms this 60-minute circle into a square measuring five miles from center to corner--and also from the center to any point on the sides of the squre.

II. The Impact of the Automobile

Figure 5 visualizes some of the changes wrought or facilitated by the passenger automobile. In 1915, the horse and wagon was still the dominant mode of local transportation; the village grocery store and the one-room school were dominant or at least typical institutions of the rural community.

Rural roads improved only gradually, and their quality at any given time imposed a limit on practicable automobile speeds. As of 1930, the automobile was already the dominant mode of transportation; grocery stores were beginning to accommodate themselves to a motorized clientele; and most rural parents were encouraging their children to attend high school.

By 1966, most residents of rural areas in the Midwest owned automobiles which could cruise at 70 miles an hour on good roads. They did much

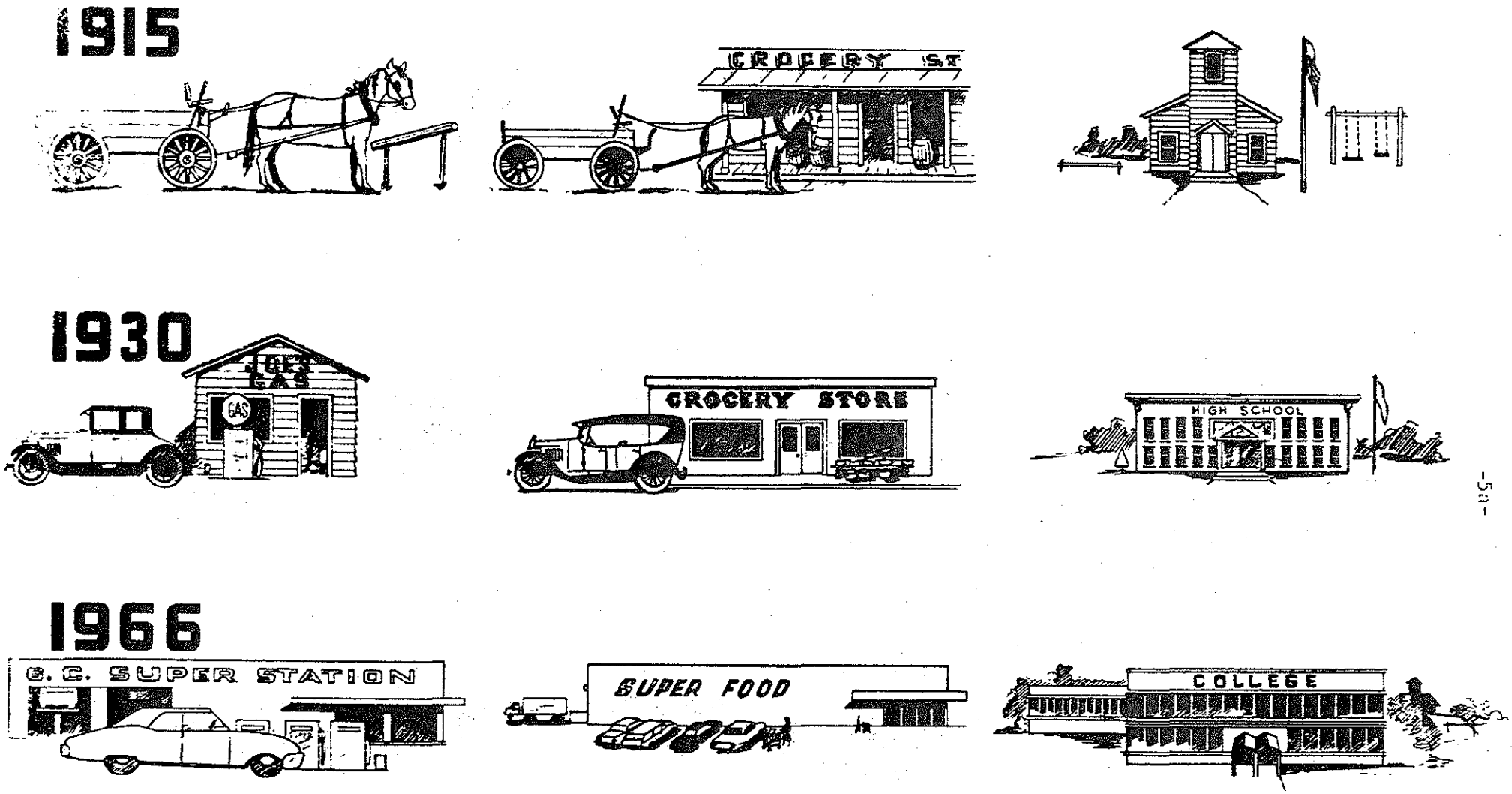


Figure 5. The Automobile and Rural Social Change, 1915-1966.

of their food shopping at supermarkets and they were encouraging their children to take some education or training beyond high school.

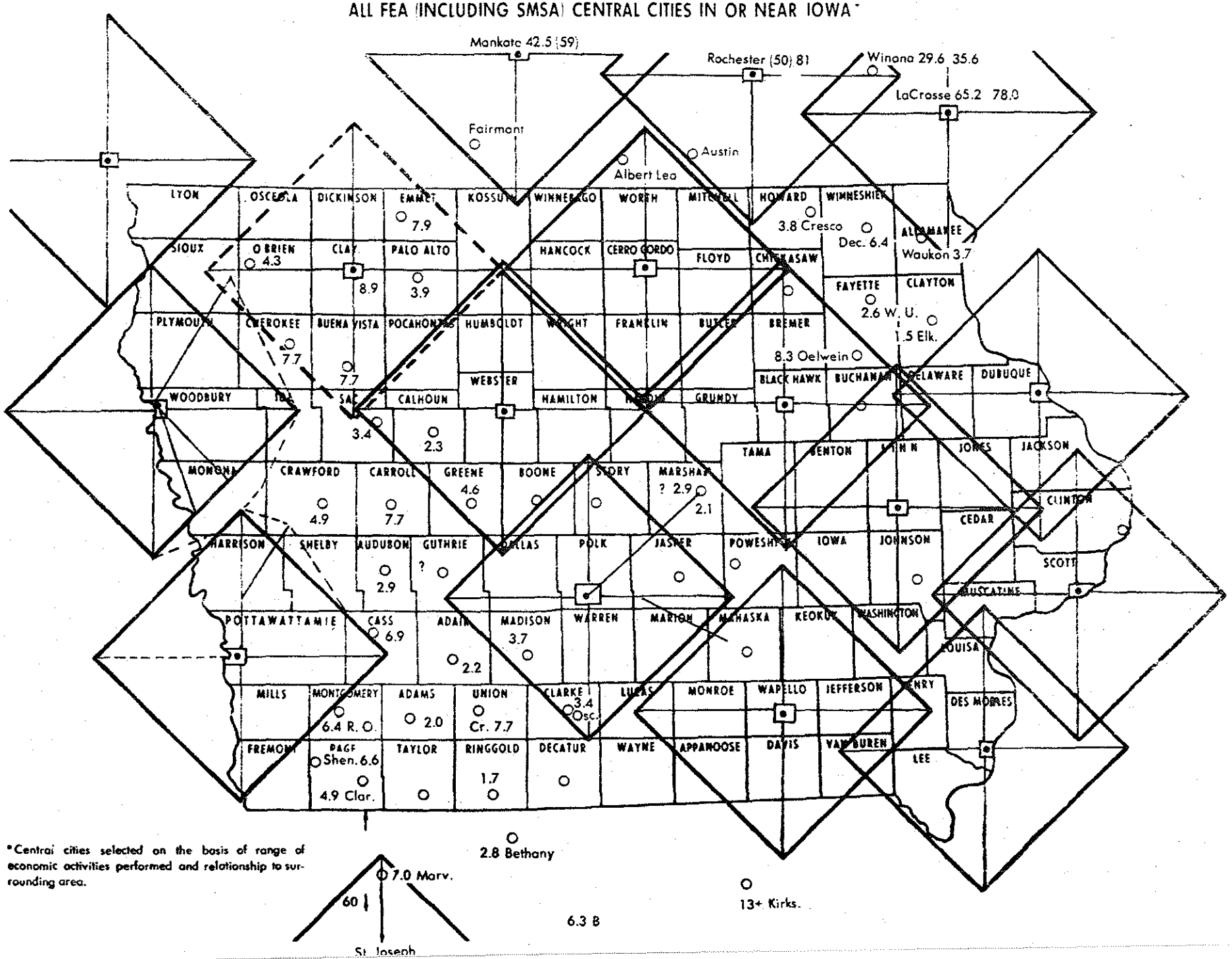
Figure 6, like Figure 4, assumes a rectangular road grid. However, reflecting improved roads and fast automobiles, the squares measure 50 miles from the central city to each corner. If we wish to reach the midpoint of the northeast side of a square, we must travel 25 miles east and 25 miles north (in any order we like). We assume that motorists can drive 50 miles in 60 minutes. Therefore, each square represents the projection of a 60-minute circle upon a rectangular road grid which transforms it into a square of the size shown.

The linear dimensions of the squares in Figure 5 are ten times as large as those in Figure 4; the areas of the squares in Figure 6 are 5,000 square miles, as against 50 square miles for those in Figure 4.

Walworth County, with an area of 576 square miles, contained 12 trade areas. As of 1967, Iowa, with an area of 56,000 square miles, contains about 12 of the expanded trade areas.

Iowa has 99 counties. Each trade area shown in Figure 6 is equal in size to 8 or 10 counties. However, as the county boundaries in most cases run east-west and north-south, the boundaries of the 50-mile squares in Figure 6 are oriented at a 45 degree angle to the county lines. Perhaps we should not make too much of this "rotation of rural society," as variations in topography, road quality, and natural barriers (such as rivers with a limited number of bridges) tend to disrupt the perfect symmetry implied by the 50-mile squares. More important is the change in regional scale, which means that a trade area of the kind shown in Figure 6

FIGURE . 50-MILE COMMUTING DISTANCES FROM THE CENTRAL BUSINESS DISTRICTS OF ALL FEA (INCLUDING SMSA) CENTRAL CITIES IN OR NEAR IOWA*



*Central cities selected on the basis of range of economic activities performed and relationship to surrounding area.

includes a number of whole counties and parts of several more. Even if we approximate these trade areas in terms of clusters of whole counties, the individual counties are too small to cope with problems of area-wide significance.

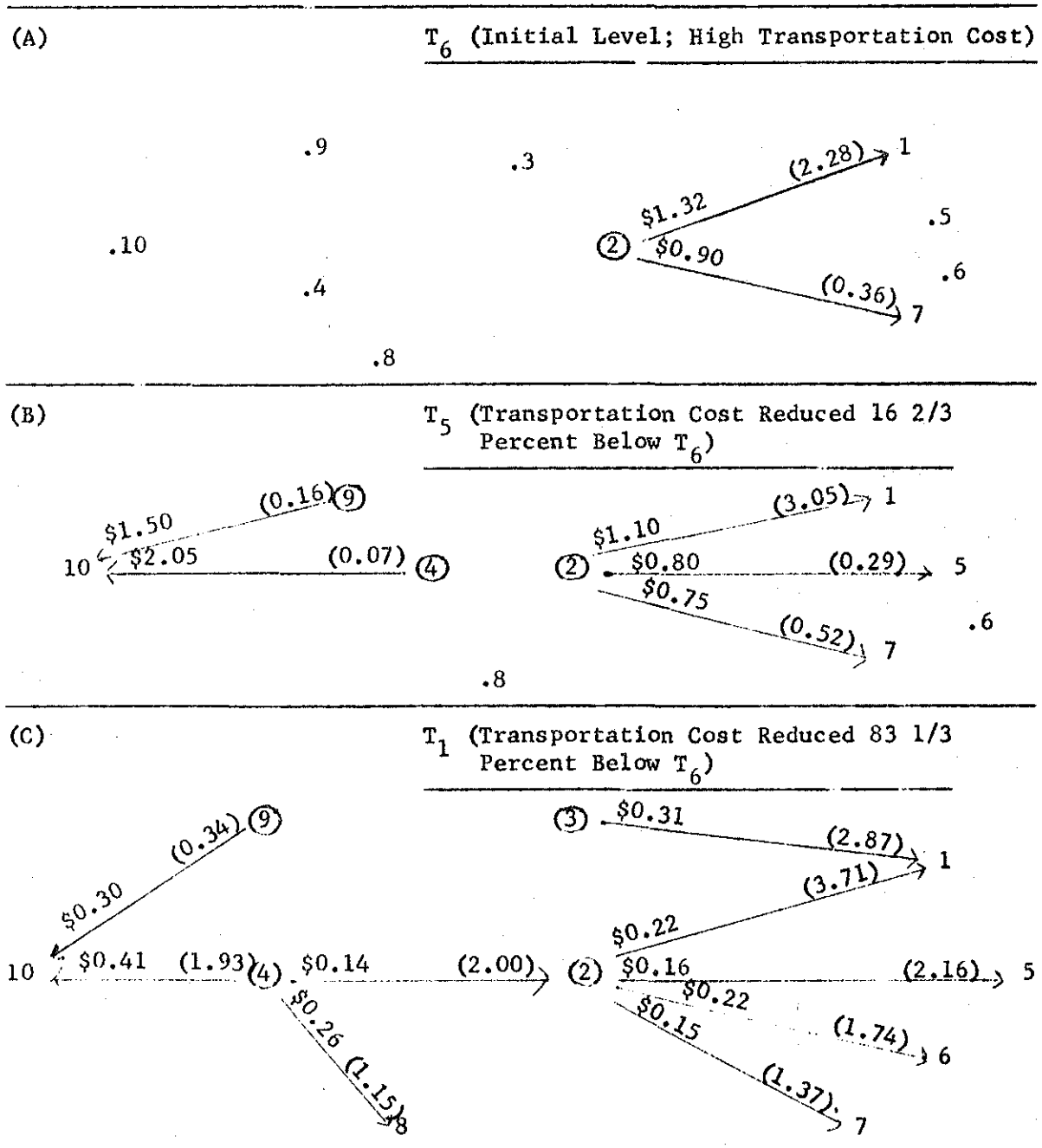
To some extent, we have assumed what we have not yet proved--namely, that areas of the size shown in Figure 6 are the modern counterparts of Galpin's "fundamental communities" of 1911-13. We shall adduce additional evidence shortly concerning the character of the present day functional economic areas of Figure 6.

Figure 7 suggests the effects of the passenger automobile on inter-village competition.

We assume ten retail trade areas, each surrounding a village and each with a fixed boundary, the group as a whole forming a compact cluster covering a contiguous geographical area. We assume that the number of consumers resident in each of the trade areas remains constant, as do their incomes.

The spatial-equilibrium model underlying Figure 7 determines the number of units of (say) groceries purchased by the residents of each of the ten areas, the equilibrium price in each area, and the number of units "exported" from or "imported" into each of the areas, given a stipulated 10 by 10 matrix of customer travel costs (per unit of groceries purchased) between all possible pairs of areas. The matrices of per unit travel costs between areas are not reproduced, but for the highest level of such costs, T_6, the range is from \$0.84 to \$3.60. When travel costs are reduced by 16 2/3 percent to level T_5, the range is from \$0.70 to \$3.00 per unit.

Figure 7. Spatial Equilibrium Among Ten Production-and-Consumption Locations: Inter-Location Trading Arrangements at Three Levels of Transportation Costs 1/



1/ Dollar figure by each arrow is transportation cost per unit (say, a standard "market basket" of groceries); figure in parentheses is number of units bought at location from which arrow leads by residents of the location at point of arrow.

Finally, when travel costs are reduced to one-sixth of their original (T_6) level, that is, to level T_1, the range becomes only \$0.14 to \$0.60 per unit.

When customer travel costs are at the high (T_6) level, only Village 2 makes sales to residents of other trade areas. Grocers in Villages 1 and 7 compete directly with the grocer in Village 2 and hence indirectly with each other. The residents of areas 3, 4, 5, 6, 8, 9 and 10 shop only in their respective villages; the grocer in each village has a true monopoly within a "reasonable" price range delimited by the cost of customer travel to the nearest alternative village.

A reduction of one-sixth in travel costs brings the grocer in Village 5 into direct competition with the grocer in Village 2 and indirect competition with those in Villages 1 and 7. Also, the grocer in Village 10 finds himself in direct competition with those in Villages 4 and 9, and the grocers in Villages 4 and 9 are in indirect competition with each other. Grocers in Villages 3, 6 and 8 retain their positions of (limited) monopoly in their respective trade areas.

A reduction of five-sixths in the cost of customer travel brings the grocers in all 10 villages into competition with one another, directly or indirectly. The grocer in Village 2 draws some patrons from areas 1, 5, 6 and 7, but some residents of his own trade area shop in Village 4. The grocer in Village 4 also draws some customers from areas 8 and 10. Grocers in Villages 9 and 3 are in direct competition with those in Villages 10 and 1.

The assumed reductions in travel costs may be interpreted as reductions in times required for customer travel; thus, if T_6 reflects customer

travel at five miles per hour, T_1 reflects customer travel at 30 miles an hour.

Figure 7, then, suggests the revolutionary impact of the passenger automobile in breaking down former village monopolies of all kinds. The first storekeeper who shifts from a village grocery operation to a modern supermarket will drastically change the interarea trading pattern and the opportunities left for other village grocers. But we will not labor this example further.

The speed of the passenger automobile has permitted larger establishments to emerge in the larger towns. These larger establishments include larger numbers of employees and involve hierarchies of several stages. The higher level positions in these job hierarchies usually require more education and/or drive and/or ability than the top jobs in the small establishments found in villages and small towns. Figure 8 gives schematic representation to this fact.

A good deal of so-called "migration" across county lines may occur within the same trade area, as additional education, training or experience qualifies young people in the more rural counties for better paying jobs which necessarily involve working in larger towns or cities than any found in their previous counties of residence. For example, the 1960 Census of Population indicated that 80 percent of the residents of Fort Dodge and Mason City (central cities of two of the trade areas in Figure 6) had been born in Iowa. A large percentage of these had very likely been born and raised within 50 miles or so of these two cities.

Figure 8. Job Hierarchies in Towns of Different Sizes

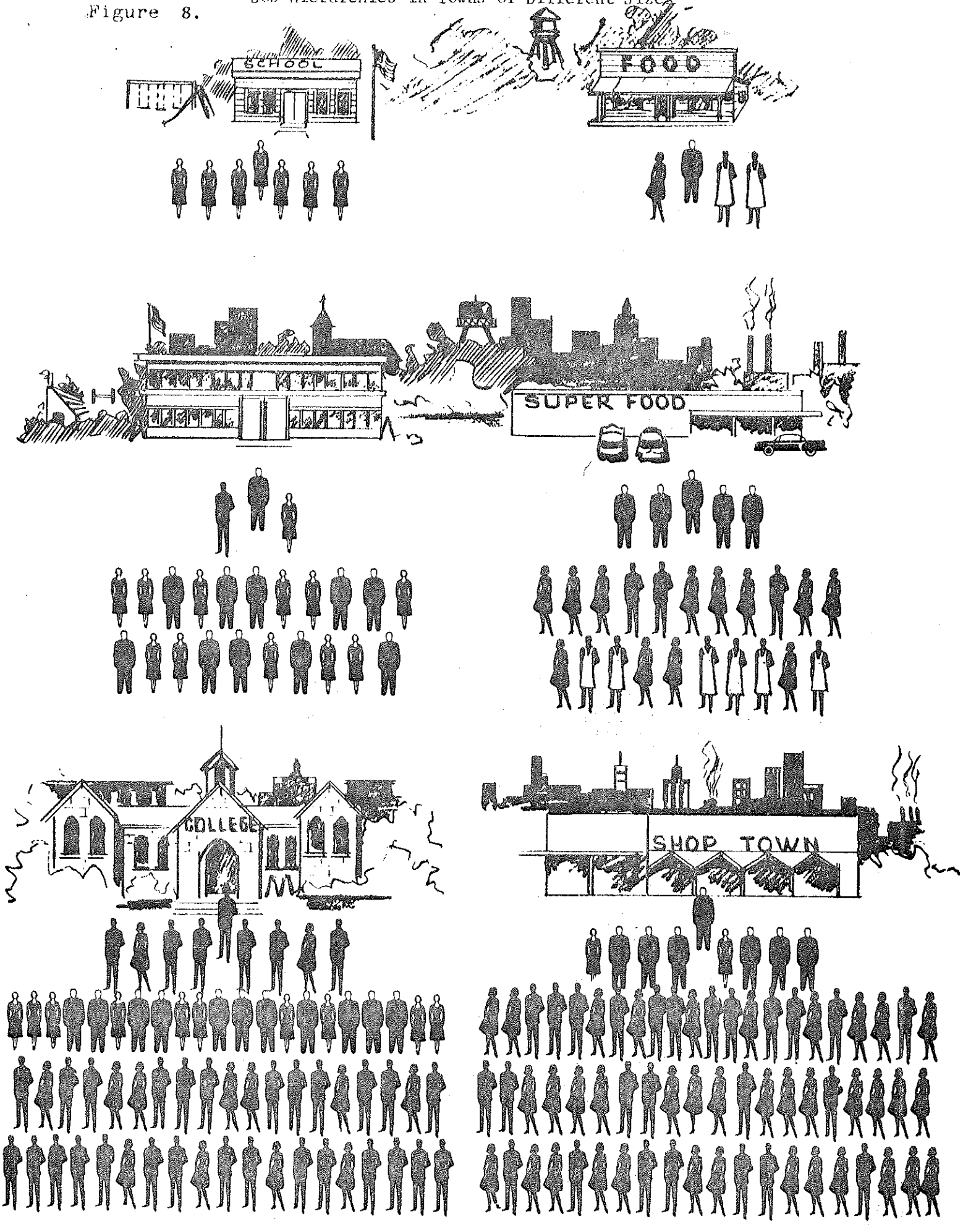
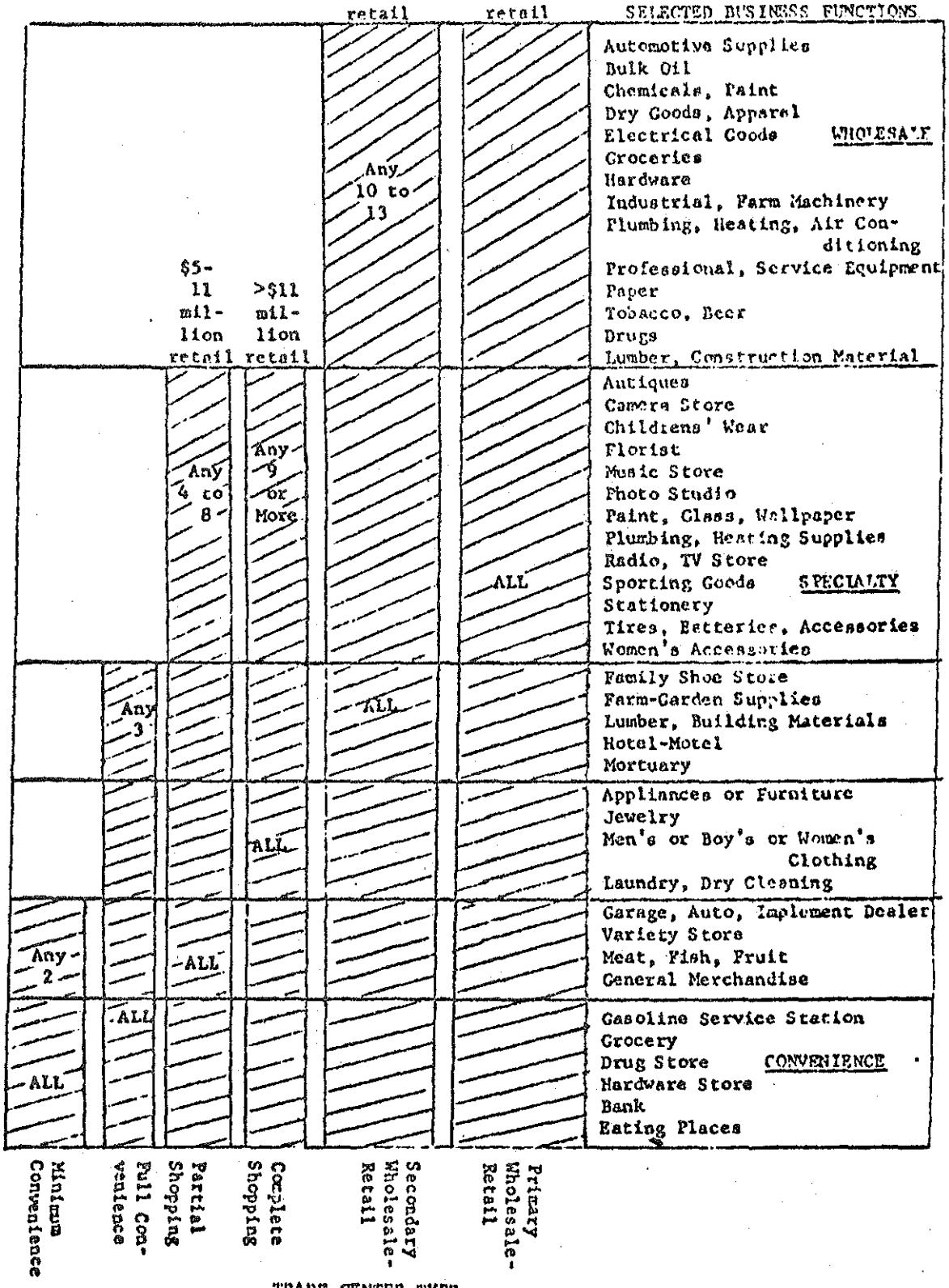


Fig. 9 TRADE CENTER TYPES DEFINED BY BUSINESS FUNCTIONS



Graphic summary of characteristics of six levels in the Trade Center hierarchy. Type of center is indicated at base of each bar. Types of business are listed in right-hand column. Businesses which were required and optional in defining each type of Trade Center are indicated by markings on each bar. Width of bar is proportional to dollar volume as indicated for Partial Shopping Centers and above.

SOURCE: Borchert & Adams, op. cit.

Figure 9 is reproduced from a study by Borchert and Adams.[4/] Borchert and Adams classified the hundreds of small towns and cities in the Upper Midwest (Minnesota and several states and parts of states to the north and west of Minnesota) into several categories or hierarchical steps on the basis of the retailing and wholesaling functions they performed. For example, a minimum convenience center would contain a gasoline service station, a grocery, a drugstore, a hardware store, a bank, an eating place and any two of four other specified kinds of retail stores. These requirements might be met by the small town of 1,000 people.

The Borchert and Adams categories seem to fit the Iowa situation rather well, and probably apply roughly to most nonmetropolitan areas in the United States. Small towns such as those Galpin studied in Walworth County would in most cases be convenience centers today. County seat towns of 2,500 to 5,000 people would typically serve as partial shopping centers, while towns of 5,000 to 25,000 population would serve as complete shopping centers.

In Iowa, the central cities of the trade areas shown in Figure 6 range from 30,000 to more than 100,000 in population.[5/] Borchert and Adams would characterize these cities according to their wholesaling functions, although I am not convinced that wholesaling is their most

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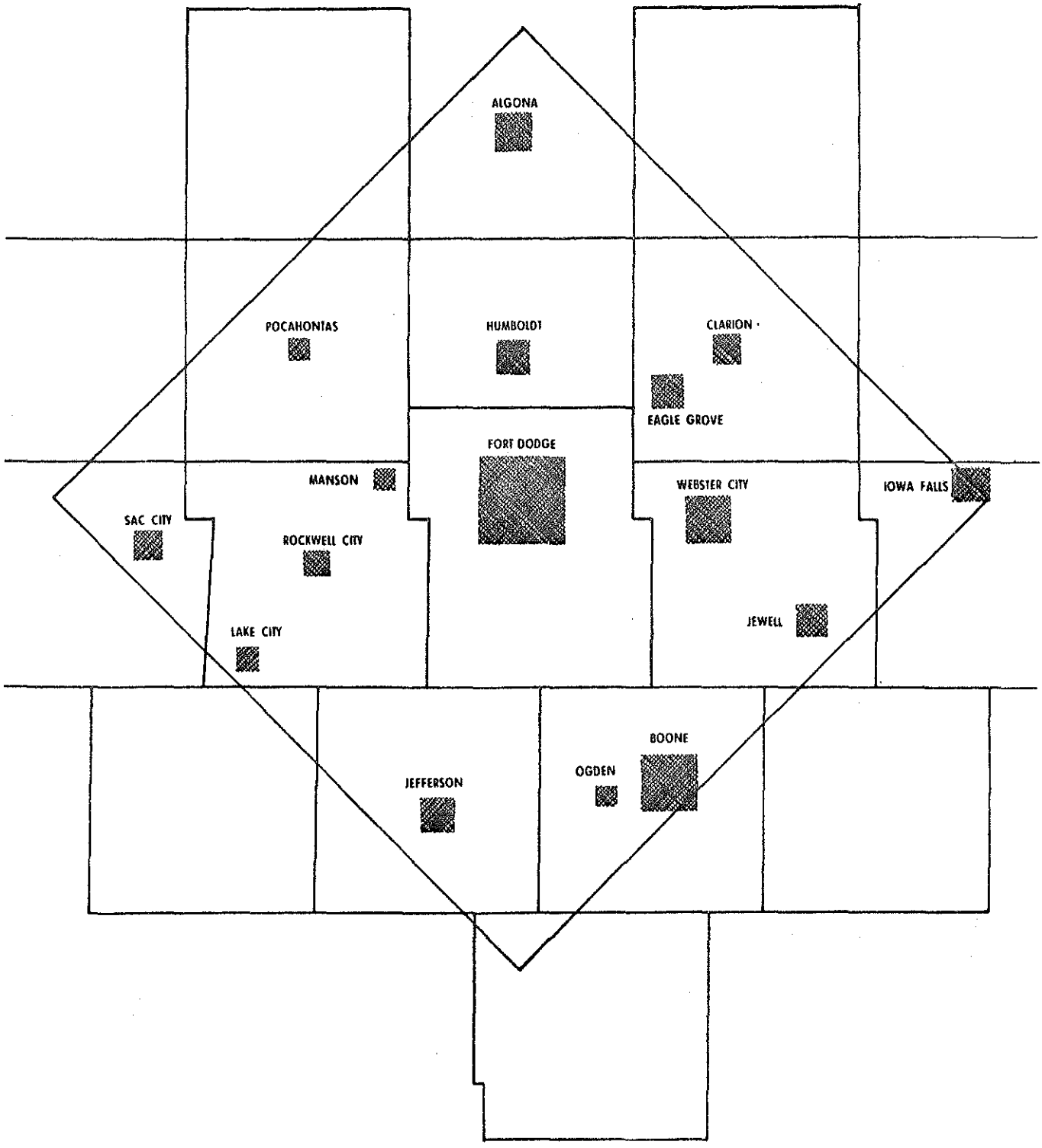
4/ Borchert, John R. and Russel B. Adams, Trade Centers and Trade Areas of the Upper Midwest, Upper Midwest Economics Study, Urban Report No. 3, September 1963, page 4.

5/ Excluding Spencer--if the area centered on Clay County in northwest Iowa is classified as an FEA.

FIGURE 10 DISTRIBUTION OF TOWN POPULATION SIZES IN THE FORT DODGE AREA* Kumar 1-29-65



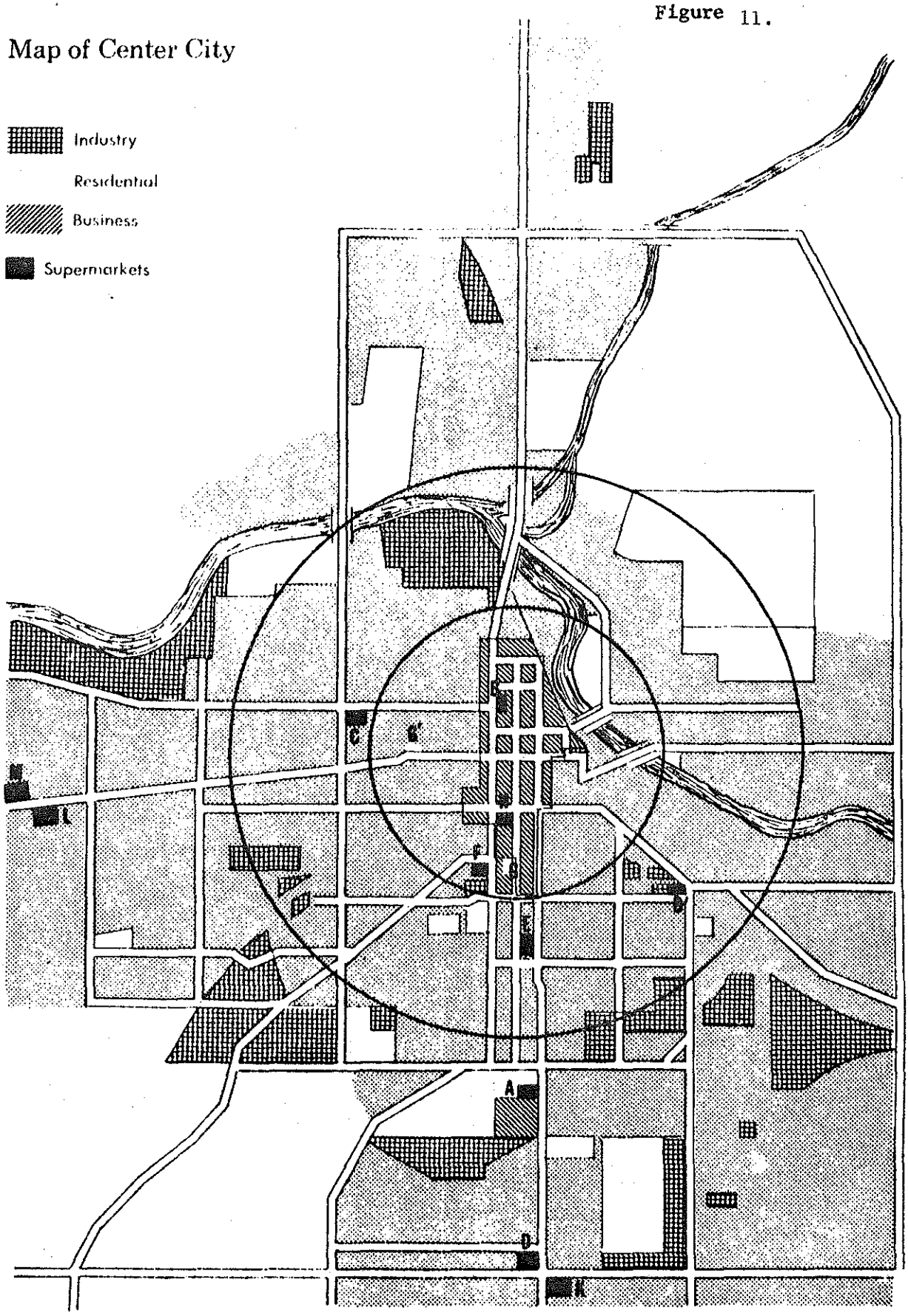
*Areas of squares are proportional to 1960 town populations. Only towns with retail sales of $2.5 million or more for year ending June 30, 1964 are shown.

important attribute. With one exception, the centers of trade areas in Figure 6 would meet the Borchert and Adams criteria for either secondary or primary wholesale-retail centers.

Figure 10 shows the distribution of town population sizes in one of the trade areas of Figure 6--the area centered on Webster County just north and west of the center of the state. Fort Dodge (population 30,000 in 1960) is the economic, social and administrative center of the area shown. It contains the largest and most complex private and public establishments in the area, including a department store and a community college. Several towns in Figure 10 would qualify as complete or partial retail shopping centers. Some of the smaller towns shown are convenience centers according to the Borchert and Adams criteria. In addition, the area within the square includes 50 or 60 smaller towns, each with retail sales of less than 2.5 million dollars in the year ending June 30, 1964. Few of these towns would qualify as full convenience centers; most of them would be in the minimum convenience center category or lower in terms of services available.

Figure 11 is the map of a midwestern city of about 50,000 people in the late 1950's. The central business district contains the department store or stores such as are found in Fort Dodge. The black oblongs are supermarket locations; these identify shopping facilities comparable to the complete and partial shopping centers found in towns of 5,000 to 12,000 population in the Fort Dodge area. Not shown in Figure 11 are the neighborhood stores, service stations and other small establishments analogous to those found in the convenience and minimum convenience centers in the Fort Dodge area.

Figure 11.



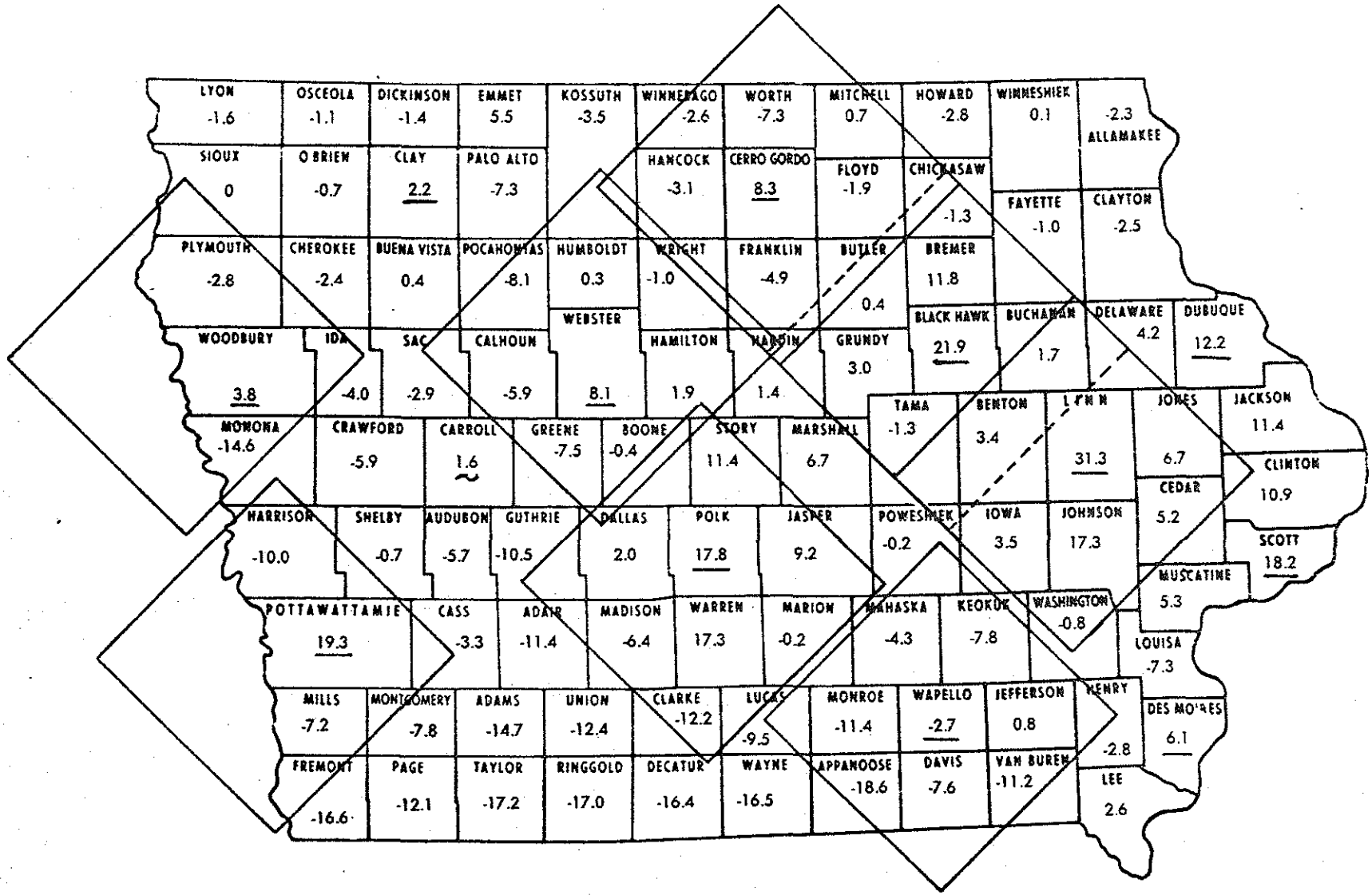
Source: Bob R. Holdren, *The Structure of a Retail Market and the Market Behavior of Retail Units*, © 1960 Prentice-Hall, Inc. Adapted by permission.

If we measure distances in terms of minutes, including time spent waiting for traffic lights and looking for parking places in the congested city, it appears that the area in Figure 10 may be regarded as a projective transformation of a central business district, medium and large-sized shopping centers, and neighborhood stores such as those found in Center City. The economic base of Center City consists primarily of 10,000 or more factory workers whose homes and work places occupy only three or four square miles of land. The economic base of the Fort Dodge area consists primarily of 10,000 or more farmers and farm workers occupying nearly 5,000 square miles of farm land. The range of consumer-oriented services found in the Fort Dodge area is quite similar to that found in Center City.

Unpublished data from the 1960 Census showing the townships of residents and counties of employment for a sample of the employed labor force support the view that areas such as that around Fort Dodge are relatively self-contained commuting and labor market areas in the short run. Very few people living within the boundary of the square in Figure 10 work outside that boundary. Conversely, relatively few persons living outside the boundary commute toward Fort Dodge. The labor market and trade area aspects of Figure 10 (and Figure 6) tend to reinforce each other in defining a modern "fundamental community" comparable to those Galpin identified in 1911-13.

Figure 12 indicates that the populations of Iowa counties containing the central cities of trade areas in nearly all cases grew more rapidly from 1950 to 1960 than did the outlying counties. Some apparent exceptions

FIGURE 12. PERCENT CHANGES IN TOTAL POPULATIONS OF IOWA COUNTIES, 1950-1960*



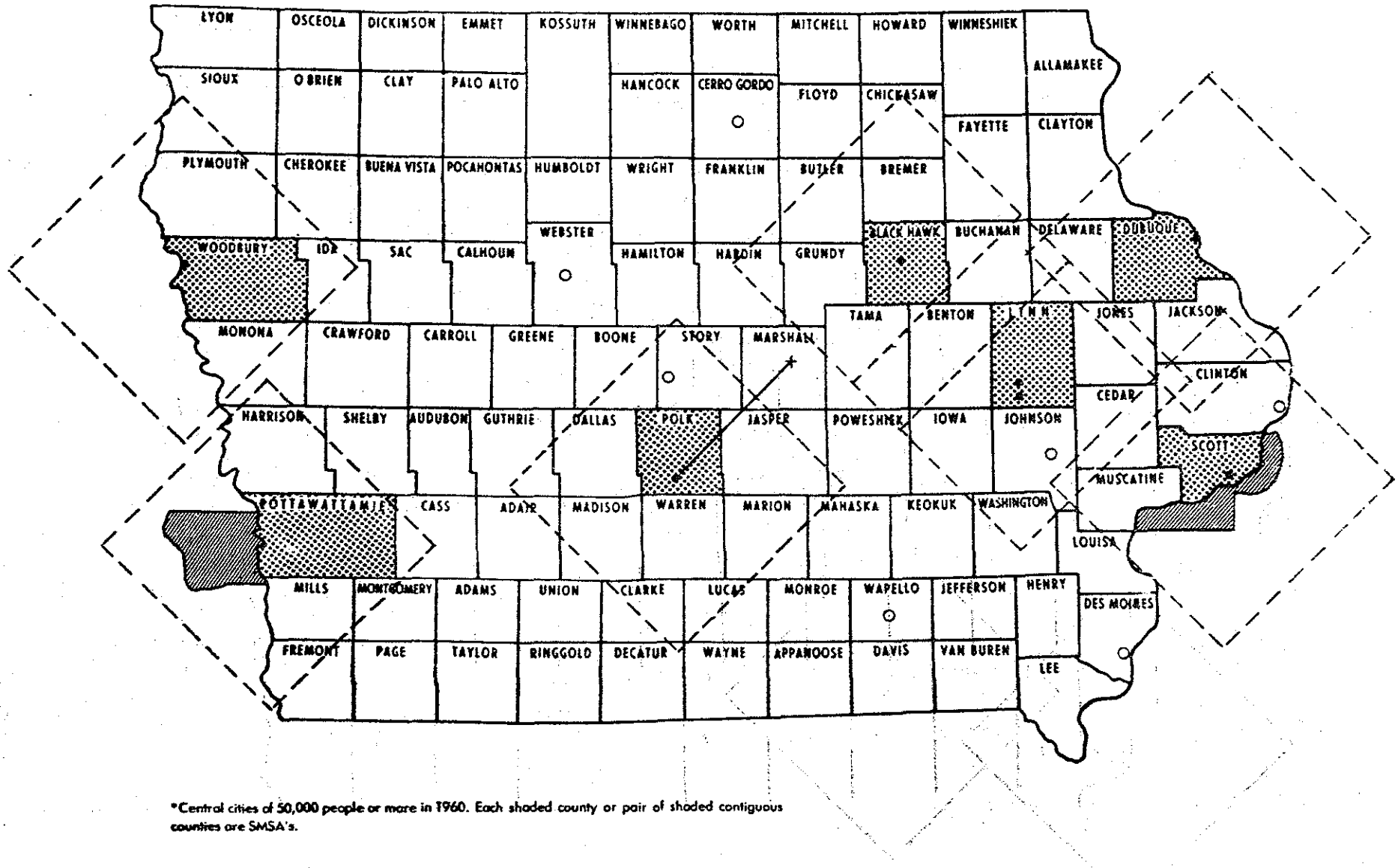
*Some of the 50-mile commuting perimeters are included to stress the redistribution of population occurring within functional economic areas.

can be readily explained. From 1900 to 1960, population growth in the 12 Iowa cities (with their suburbs) which are centers of functional economic areas amounted to about 540,000, slightly larger than the total population increase for the state. Many of the rural counties showed absolute decreases in population, and most towns which had populations of 1,500 or more at the turn of the century showed considerable population growth. The process underlying Figure 12 might be called "creeping urbanization," the population of each area has been gradually moving inward toward the central city, and the population density gradient from the perimeter toward the center of each square has become steeper.

III. The Spatial Organization of United States Society, 1967

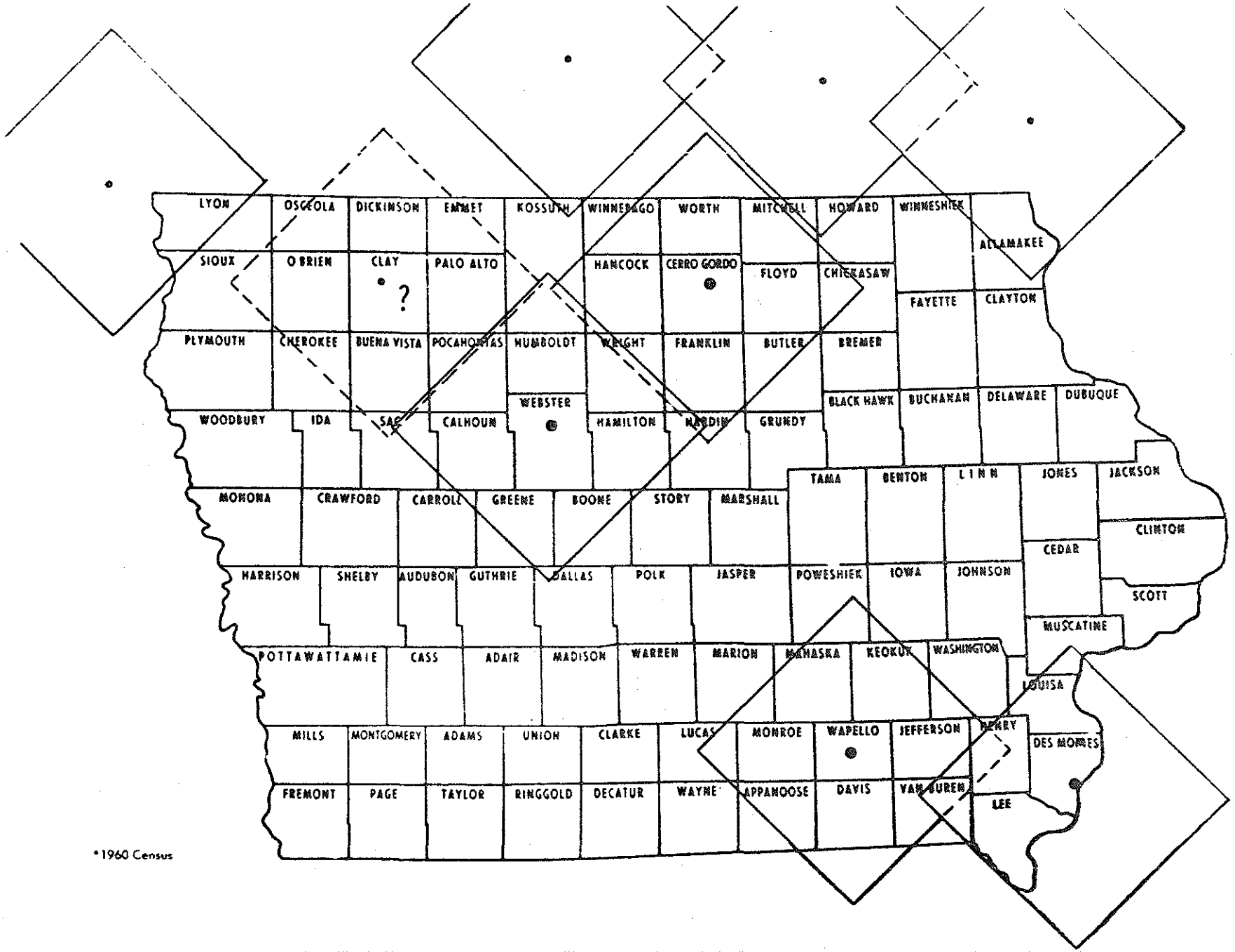
Most economists are familiar with the system of Standard Metropolitan Statistical Areas (SMSA's) which figure prominently in the U.S. Census Bureau's publications of economic and demographic data. There are about 213 SMSA's in the United States. Each SMSA consists of a county or a cluster of contiguous counties at the center of which is a city or urbanized area with a population of at least 50,000. As of 1960, Iowa contained seven SMSA's, each consisting (within Iowa) of a single county; two of these SMSA's also included one or two counties in adjoining states. The central city of each SMSA in Figure 13 is also the central city of a functional economic area with its labor market and trade area aspects. Nearly all of the 213 SMSA's in the United States also serve as the centers of labor market and trade areas which are more extensive than the SMSA's as such.

FIGURE 13 50-MILE COMMUTING DISTANCES FROM THE CENTRAL BUSINESS DISTRICTS OF IOWA SMSA CENTRAL CITIES*



*Central cities of 50,000 people or more in 1960. Each shaded county or pair of shaded contiguous counties are SMSA's.

FIGURE 14 50-MILE COMMUTING DISTANCES FROM THE CENTRAL BUSINESS DISTRICTS OF IOWA FEA CENTRAL CITIES WITH LESS THAN 50,000 POPULATION*



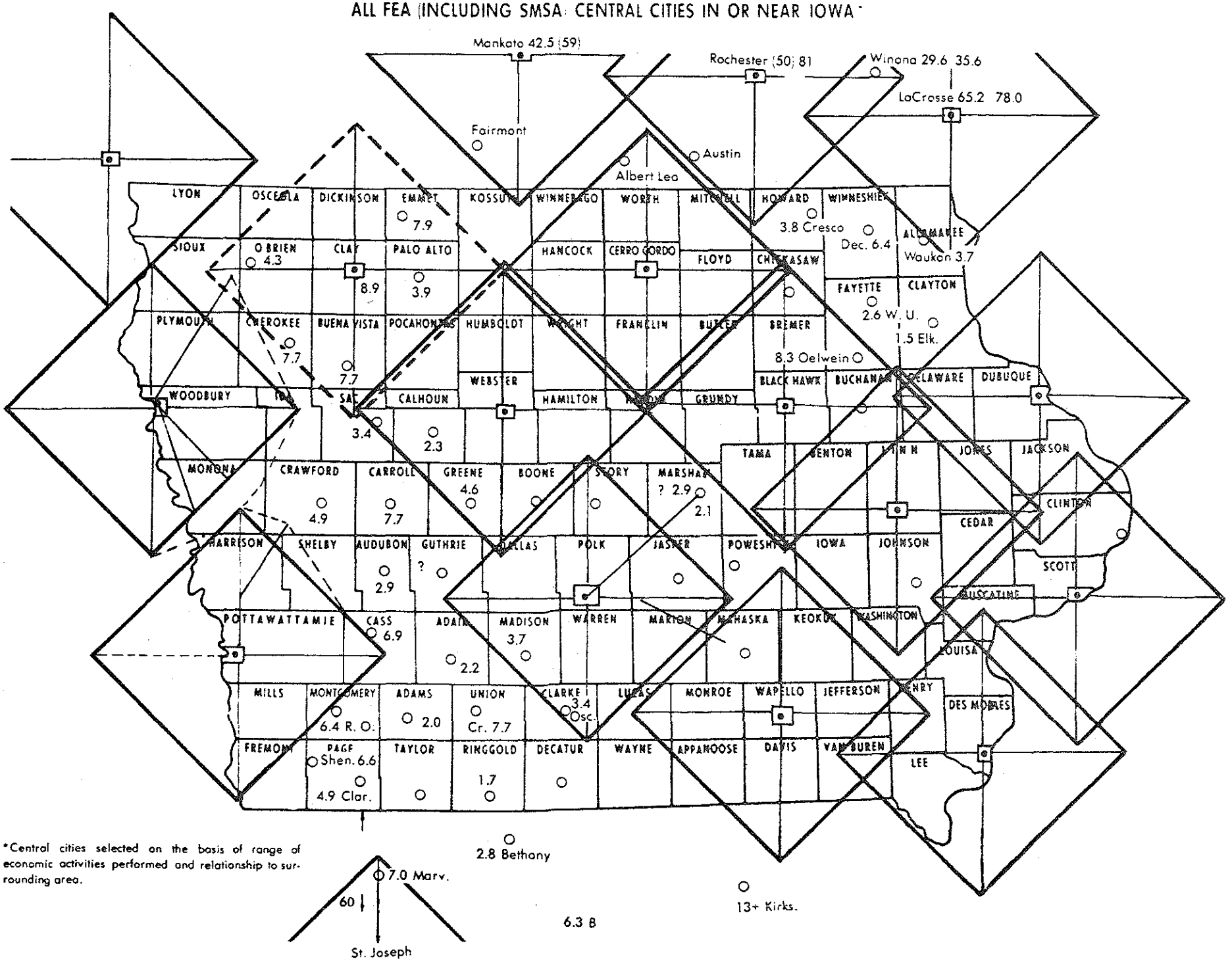
*1960 Census

Figure 14 shows similar 50-mile squares or 60-minute commuting perimeters around several Iowa cities of less than 50,000 population. Obviously, the 50,000 minimum population for an SMSA central city represents an arbitrary truncation of the frequency distribution of city sizes. The central cities of four of the Iowa functional economic areas shown in Figure 14 had populations of 30,000 to 35,000 in 1960. It is worth noting that the total population of each of these four areas is approximately 150,000, or three times as large as the minimum population for an SMSA!

The dashed outline around Clay County in northwestern Iowa may be regarded as containing a potential rather than an actual functional economic area. The central city of this area is Spencer, a town of about 10,000 people, but with large retail sales for its size; its population and retail sales are expanding quite rapidly.

Figure 15 is identical with Figure 6; it is obtained by superimposing Figure 14 upon Figure 13. About 80 percent of the area and 90 percent of the population of Iowa are within these 50-mile squares. The completion of new interstate highways (and other improved highways) is having the effect of packing adjacent functional economic areas more tightly together and filling or reducing some of the gaps in Figure 15 (if we choose a one-hour commuting radius, rather than 50 highway miles, as our most basic concept). It would evidently be possible to partition Iowa into about 12 areas which would include the entire territory of the state. If desired for political or statistical reasons, these areas could consist of clusters of whole counties.

FIGURE 15 50-MILE COMMUTING DISTANCES FROM THE CENTRAL BUSINESS DISTRICTS OF ALL FEA (INCLUDING SMSA CENTRAL CITIES IN OR NEAR IOWA*



*Central cities selected on the basis of range of economic activities performed and relationship to surrounding area.

Areas such as that centered on Taylor County in southwest Iowa could be allocated between adjacent functional areas on the basis of major shopping criteria. Taylor County is nearly 100 miles from either Des Moines or Omaha, so daily commuting is not a good alternative. Between 1950 and 1960, the number of males aged 25 to 34 in Taylor County decreased 41 percent, indicating that a great many young men had migrated from the area.

Figure 16 suggests that an exhaustive set of functional economic areas could be delineated for the entire United States. East of the Missouri River, the vast majority of the population lives within 50 miles of towns of 25,000 or larger. In the Mountain states, it appears that towns with populations of 10,000 to 15,000 provide essentially the same range of goods and services as is found in towns of 30,000 to 50,000 population in the Midwest. In sparsely-populated areas, highway speeds are faster than in the congested areas; also, the residents may be willing to spend longer times on their individual shopping and recreational trips. (Whether they will tolerate longer daily commuting time is another question.) It appears that a number of functional economic areas in the Mountain states would include less than 40,000 or 50,000 people within reasonable commuting times of their central cities.

It is evident that a functional economic area or FEA system could absorb the existing SMSA system without difficulty. East of the Missouri River, most FEA's would include total populations of 150,000 or more. If the residents of such an area recognized their community of interest, they should be able to support school systems and medical services of

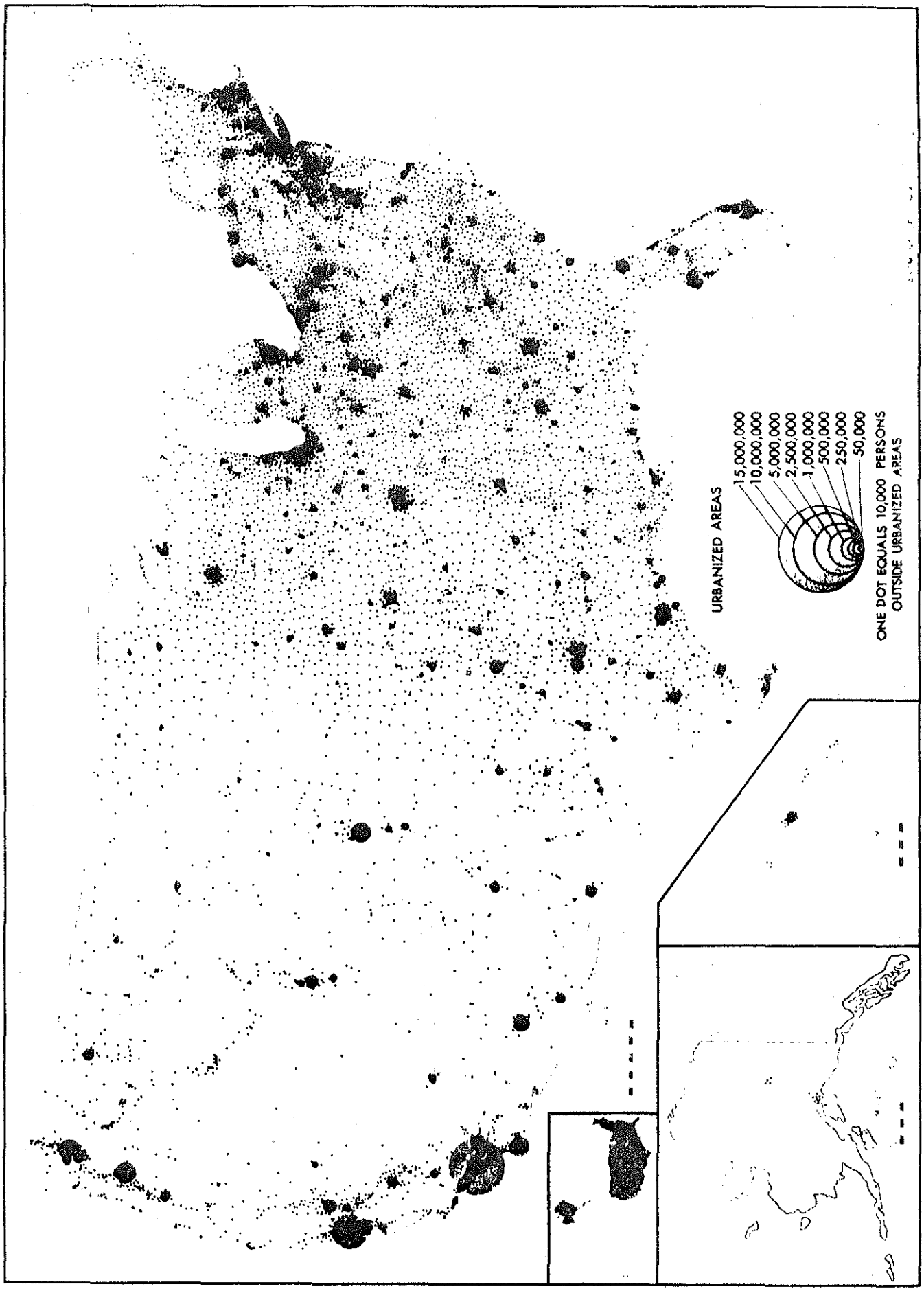


Figure 16—POPULATION DISTRIBUTION: 1960

as high quality as a city of 150,000 people. Such an area should contain a substantial and diversified pool of professional and lay talent and present a wide range of problems and challenges for potential leaders.

It is not clear that an area with a population of only 40,000 can provide as full a range of services and leadership as can the more populous areas east of the Missouri River. Conceivably, several contiguous areas in the Mountain states might need to cooperate in providing a sufficient population and tax base for high quality educational, professional and cultural services.

We have shown how the passenger automobile, operating for more than half a century, has transformed the rural community of Galpin's time into an expanded community of perhaps 100 times the area. The automobile has permitted the realization of economies of size and specialization in many kinds of private and public establishments and has encouraged a new synthesis of rural and urban society.

It appears that the United States can be viewed as a set of 400 or so relatively self-contained labor market or commuting areas. It seems likely that the automobile will continue to be the dominant mode of personal transportation during the next decade or two. Improvements in this mode of transportation will tend to pack the existing functional economic areas more closely together, but are not likely to change the basic "granular" structure of the United States economy.

These areas provide a logical basis for regionalizing the national data system and for formulating and implementing economic and social policies relating to employment, education, retraining and other people-oriented objectives. These areas could also be used as basic units for

estimating the effectiveness of government programs in a more tangible way than that of working directly with national aggregates.

IV. Implications of the Present Structure of the United States Economy for Farm Management and Marketing Research

The picture of the United States economy and society we have drawn has certain implications for the consumer end of the food marketing system and also for adjustments in the ratios of labor to capital in agriculture within each labor market area.

A. Nature of the Consumer Market for Farm Food Products

Each functional economic area appears to be a relatively self-contained labor market, shopping and consumer service area. Each one has its export base activities, including agriculture and/or manufacturing in most cases. The residentiary sectors of different functional economic areas are characterized more by similarities than by differences. National chains of department stores, hotels, motels and other establishments recognize these similarities and also reinforce them.

Hence, we may view the United States as a set of 400 or so "macro-households," each with a consumer demand matrix and a consumer-income constraint analogous to George Brandow's national model of the demand for food.[6/]

In the nonmetropolitan functional economic areas (as in Figure 10), it may be helpful to classify goods and services into those which are available only in the central city; those which are available in the

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6/ See Brandow, George E., Interrelations Among Demands for Farm Products and Implications for Control of Market Supply, Penn. Agr. Exp. Sta. Bul. 680, University Park, Pennsylvania, August 1961, p. 17.

central city and also in complete shopping centers of perhaps 5,000 to 25,000 people; and those which are also available in towns of less than 5,000 population. (Borchert and Adams described several hierarchical levels of trade centers; however, it may be that no more than three levels of retail trade centers are economical in the sense of justifying new construction at the present time.)

If the trade centers in an FEA are classified into (say) three hierarchical levels, equilibrium for each household in the area involves maximizing the utility of goods and services that can be purchased and brought home within the family's income constraint. An optimal solution to this problem involves spatial equilibrium considerations in addition to the family budget constraint.

The same model can evidently be extended into metropolitan areas so far as consumer purchases are concerned. The article on Shopping Centers in the 1965 edition of the Encyclopaedia Britannica speaks of three kinds of shopping centers or plazas in metropolitan areas. The largest of these is the so-called "regional shopping center" serving as many as 500,000 people, the chief tenant of the center being a suburban branch of a large downtown department store. The next smaller kind is the "district center" and serves from 60,000 to 120,000 people; the chief tenant of such a center is usually a department store (though smaller and less distinctive than the dominant type found in a regional center). The smallest kind of shopping center recognized in the article is the "neighborhood center" which serves from 15,000 to 30,000 people; the chief tenant is usually a food supermarket.

Around smaller cities, the labor market and shopping areas tend to be coextensive. In the largest cities, the connection between retail trade areas and commuting areas is loosened by the existance of alternative modes of transport. But, the consideration of this problem within metropolitan areas is not germane to the purposes of this conference.

In nonmetropolitan areas, the central cities of FEA's are the concentration points for wholesaling and warehousing activities. For example, the warehouses in Fort Dodge, Iowa, a city of 30,000, are much too large for Fort Dodge as such. Their size is determined and justified by the total population of the trade area, which is approximately 150,000.

In considering the prospects for economies of scale, it appears that the opportunities available to food wholesalers, dairies and bakeries might well be visualized in terms of discrete numbers of functional economic areas, perhaps including in that definition the "regional shopping center" trade areas in the larger cities.

B. Nature of Resource Adjustments Within FEA's Regarded as Labor Market Areas

We have indicated that each functional economic area is a relatively self-contained labor market in the short run. We might conceptualize the process of agricultural adjustment as an iterative logical procedure along the following lines: (1) Starting with the existing labor force and stock of capital in an FEA, we might reallocate these resources within the area (a) to equalize the marginal value products of labor of any given quality among sectors and (b) to equalize the marginal value products of capital among sectors, agricultural and nonagricultural.

We may subdivide both agriculture and nonagriculture into as many sectors as may be required to recognize significant differences in production functions or processes.

If this initial reallocation were done on the assumption that the FEA is a "point economy," we might next let in real space and allow for the possibility that the marginal value product of labor of a given quality performed at a distance of 50 miles from the central city might be smaller than the marginal value product of that labor applied in the central city itself. In other words, within the FEA we would expect to find wage and opportunity cost surfaces for each distinctive kind of labor. These surfaces would have their highest points at the central city and would slope downward with increasing distance from the central city.

The next logical step would be to compare the marginal value products of labor of given qualities among FEA's and also the marginal value products of similar kinds of capital. Then, using spatial equilibrium concepts, we might calculate a pattern for equalizing marginal value products among areas which would minimize the social and economic costs of migration and capital relocation among FEA's. Next, we might consider an optimal pattern of organization in each FEA under 1967 technology and make retraining of the local labor force an alternative to migration. Once again we would equate marginal value products across sectors within each FEA and (globally) among FEA's.

It must be stressed that an FEA is a labor market area, urban and rural, agricultural and nonagricultural. If the United States should

adopt an active labor market policy like that of Sweden, it would be logical to try to maintain full employment in each FEA. Any worker who could not be employed in a "good" job in the FEA at a given time would be paid while engaged in additional training or retraining. Wages for agricultural workers under such a policy would have to be fully competitive with wages in other sectors of the area's economy at all times.

If the federal and state governments cooperated to maintain essentially full employment (including persons engaged in sponsored training programs) in each FEA, one result would be a steady economic pressure to reallocate persons with managerial talent as between farming and other activities.

In the nonagricultural sectors, there is a strong income gradient favoring moves up the managerial hierarchies of both consumer-oriented and export-oriented enterprises. With continuous full employment in an FEA, it appears that agriculture would also tend to move toward sizes of operating units in which managerial, bookkeeping, technical and "blue collar" functions would be performed by distinct individuals. If different functions received very different salaries or wages, a man who could perform the highest salaried function should ordinarily spend full time on it. Producers' and/or marketing coops could (and in some cases do) accomplish some of this specialization; so do integrators in the broiler industry.

One other possibility should be considered as we look ahead. We hear much talk about air pollution, water pollution and traffic congestion in our major metropolitan areas. We also hear arguments in favor

of the establishment of "new towns" as an alternative to continuing expansion and increasing congestion in our largest cities.

If it became federal policy to encourage the growth of trade area centers which now have 20,000 to 50,000 people until they reached 75,000 or 100,000 people, there would be construction booms in many rural areas. This policy might also be viewed as a major instrument for stimulating the development of lagging regions, by using "growth centers" as the leading sectors in regional economic development.

Several of the smaller European countries appear to have achieved unemployment rates of less than 2 percent or even (in some cases) less than 1 percent. If the United States should strive for similar standards area by area, agriculture would be under constant pressure to pay fully competitive wages to hired workers and to provide fully competitive incomes for farm operators and for farm boys who were considering careers in agriculture.

My view of the present and future framework within which marketing and farm management research must operate may be summarized as follows:

In the United States the traditional dichotomy between urban and rural has largely disappeared. The image of the traditional dichotomy lingers in the minds of many people, rural and urban alike, and contributes to much confusion concerning appropriate solutions for the economic and educational problems of "rural" people. The greatest problem of rural society in the United States is the belief that a rural society still exists and can be manipulated successfully apart from the society as a whole.

For better or for worse, the city as an economic and cultural entity has surrounded the country. Farmers and agricultural economists

must now deal with an essentially urban market for labor, for capital and, increasingly, even for land.

(End)